REMARKS

Claims 1-51 are pending. The Examiner's reconsideration of the rejections is respectfully requested in view of the amendments and remarks.

As an initial matter, Applicants appreciate the Examiner's remarks, including the note that there is no prior art rejection applied to Claims 12-13 and 28-30.

Claims 1-3, 5, 8-11, 14, 35-40, 42, 49 and 51 have been rejected under 35 USC 101, as being directed to non-statutory subject matter.

Claims 1 and 35 are the independent claims.

Claim 1 claims, *inter alia*, "the automated method is executed by a processor." Claim 35 claims, *inter alia*, "a processor to execute and analyze program code."

Claims 1 and 35 claim a processor, tying the claims to another statutory class. In view of the foregoing, Claims 1 and 35 are believed to satisfy the requirements of 35 USC 101.

Claims 2-3, 5, 8-11, 14, 42 and 49 depend from Claim 1. Claims 36-40 and 51 depend from Claim 35. The dependent claims are believed to be allowable for at least the reasons given for Claims 1 and 35. Reconsideration of the rejection is respectfully requested.

Claims 1-51 have been rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over Claims 1-37 of US Patent No. 6,725,333.

Applicants will consider filing a terminal disclaimer upon resolution of the remaining rejections.

Claims 42-44 and 46-48 have been rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement.

Claim 42 claims, "wherein said probability represents a likelihood of a value of a cachable entity changing due to execution of the cachable entity." Claim 46 claims, "instructions for determining said probability representing a likelihood of a value of a cachable entity changing due to execution of the cachable entity."

Claims 42 and 46 have been amended to clarify the probability. Further, the claims are believed to be supported by, for example, paragraph [0094] of the published application.

Claims 43 and 44 depend from Claim 42. Claims 47 and 48 depend from Claim 46. The dependent claims are believed to be allowable for at least the reasons given for Claims 42 and 46. Reconsideration of the rejection is respectfully requested.

Claims 1, 5, 10, 18, 22, 27, 35, 39, 40, 41, 45, and 49-51 have been rejected under 35 USC 102(b) as being anticipated by Nakanishi et al. (US 5,940,857). The Examiner suggests essentially that Nakanishi teaches all of the limitations of Claims 1, 5, 10, 18, 22, 27, 35, 39, 40, 41, 45, and 49-51.

Claims 1 and 18 claim, *inter alia*, "determining a probability that the at least one statement will execute; determining the desirability of performing the at least one cache transaction based on the probability that the at least one statement will execute."

Claim 35 claims, *inter alia*, "the processor determining a probability that the at least one statement will execute and determining the desirability of performing the at least one cache transaction based on the probability that the at least one statement will execute; and a cache manager for performing the at least one cache transaction if it is determined to be desirable."

Nakanishi teaches that the program analysis is performed on a currently read block of instructions to determine the possibility of a branch operation and determine whether or not a next succeeding block of instructions should be read from main memory, i.e., to implement an advance read function (see abstract and Col. 4, lines 22-44). In other words, Nakanishi determines whether there in an instruction in a currently read block that enables prediction of whether or not a next succeeding block of instructions should be fetched from main memory; execution of the instruction in the currently read block is a certainty. That is, the method of Nakanishi fails to teach that a current read block of instructions is associated with a probability of execution based execution of the current read block of instructions is assumed. Therefore, the program analysis of Nakanishi is fundamentally different from the claimed program analysis functionality. In view of the foregoing, Nakanishi fails to teach "determining a probability that the at least one statement will execute" as claimed in Claims 1, 18 and 35.

Claims 5, 10, 41 and 49 depend from Claim 1. Claims 22, 27 and 45 depend from Claim 18. Claims 39, 40 and 51 depend from Claim 35. The dependent claims are believed to be allowable for at least the reasons given for the respective independent claims. Reconsideration of the rejection is respectfully requested.

Claims 1, 2, 4-6, 8, 18, 19, 21, 23, 35, 36, 38-41, 45, and 49-51 have been rejected under 35 USC 102(b) as being anticipated by Dubey et al. (US 5,774,685). The Examiner suggests essentially that Dubey teaches all of the limitations of Claims 1, 2, 4-6, 8, 18, 19, 21, 23, 35, 36, 38-41, 45, and 49-51.

Claims 1 and 18 claim, *inter alia*, "determining a probability that the at least one statement will execute; determining the desirability of performing the at least one cache transaction based on the probability that the at least one statement will execute."

Claim 35 claims, *inter alia*, "the processor determining a probability that the at least one statement will execute and determining the desirability of performing the at least one cache transaction based on the probability that the at least one statement will execute; and a cache manager for performing the at least one cache transaction if it is determined to be desirable."

Dubey discloses analyzing program code, such analysis is for the purpose of identifying "prefetch points" or points at which instruction or data cache misses are likely to occur at run-time, such that data or instructions can be prefetched from main memory (see, Col. 3, lines 27-38) and thus to reduce latency of possible cache-misses. Dubey does not teach "determining a probability that the at least one statement will execute." Consider that the likelihood of a cache miss is distinct from the "probability that the at least one statement will execute" as claimed; that is, similar to Nakanishi above, for Dubey to identifying prefetch points at which instruction or data cache misses are likely to occur, it must be assumed that an instruction has executed. Dubey fails to teach any probability related to the instructions. Therefore, Dubey fails to teach all of the limitations of Claims 1, 18 and 35.

In this regard, Dubey does not teach "determining a probability that the at least one statement will execute." Dubey detects statements where cache misses are likely to occur and then generates a STOUCH instruction (which is inserted at a prefetch point) that specifies conditions of specific conditional branch outcomes that would result in a run-time control flow leading from the prefetch point to the regular access point. With this process, when a given

statement is detected (which is assumed as shown above), there is no determination as to the probability that the statement will execute.

In view of the foregoing, Dubey fails to teach "determining a probability that the at least one statement will execute" as claimed in Claims 1, 18, and 35.

Claims 2-17, 41-44, 49 depend from Claim 1. Claims 19-34 and 45 depend from Claim 18. Claims 36-40 and 51 depend from Claim 35. The dependent claims are believed to be allowable for at least the reasons given for the respective independent claims. Reconsideration of the rejection is respectfully requested.

Claims 1-8, 10, 14-25, 27, 31-51 have been rejected under 35 USC 102(b) as being anticipated by Cytron et al. (Automatic Management of Programmable Caches, Proceedings of the 1988 International Conference on Parallel Processing, 1988, pp. 75-84). The Examiner suggests essentially that Cytron teaches all of the limitations of Claims 1-8, 10, 14-25, 27, 31-51.

Claims 1 and 18 claim, *inter alia*, "determining a probability that the at least one statement will execute; determining the desirability of performing the at least one cache transaction based on the probability that the at least one statement will execute."

Claim 35 claims, *inter alia*, "the processor determining a probability that the at least one statement will execute and determining the desirability of performing the at least one cache transaction based on the probability that the at least one statement will execute; and a cache manager for performing the at least one cache transaction if it is determined to be desirable."

Cytron is directed to a compiler-directed cache coherence method for maintaining cache coherence in a multiprocessor system wherein each processor has a cache associated therewith and wherein the processors read contents of a shared memory location. In other words, Cytron is

concerned with maintaining consistency of cached values in the various caches, which are read by an application. Cytron fails to teach "determining a probability that the at least one statement will execute" as claimed in Claims 1, 18, and 35.

In the Remarks section of the Office Action, the Examiner suggests that "each time a Do loop is encountered, the probability of the statements in the loop being executed is 1..." Even assuming, *arguendo*, that the Examiner's suggestion is correct, the fact that a probability that a thing happening is "1" is not the same as actually "determining a probability that the at least one statement will execute" as claimed in Claims 1, 18, and 35.

Furthermore, such a determination would be completely superfluous under the teachings of Cytron – that is, there is no motivation to "determine" a probability of something occurring if the occurrence is certain. Cytron fails to teach such a determination, and therefore, fails to teach all of the limitations of Claims 1, 18 and 35.

Claims 2-8, 10, 14-17, 41-44, and 49 depend from Claim 1. Claims 19-25, 27, 31-34 and 45 depend from Claim 18. Claims 36-40 and 51 depend from Claim 35. The dependent claims are believed to be allowable for at least the reasons given for the respective independent claims. Reconsideration of the rejection is respectfully requested.

Claims 9 and 26 have been rejected under 35 USC 103(a) as being unpatentable over Cytron in view of Levine et al. (US 6,073,129). The Examiner suggests that the combination of Cytron and Levine teach or suggest all of the limitations of Claim 9 and 26.

Claim 9 depends from Claim 1 and Claim 26 depends from Claim 18. The dependent claims are believed to be allowable for at least the reasons given for the respective independent claims. Reconsideration of the rejection is respectfully requested.

For the forgoing reasons, the application, including Claims 1-51, is believed to be in condition for allowance. Early and favorable reconsideration of the case is respectfully requested.

Respectfully submitted,

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